Colorado Department of Health

Review and Comment
Technical Memorandum #7 - Selection of Models for the
Public Health Evaluation, OU1
Rocky Flats Plant, Colorado
August 1992

1 *The document adequately represents the conceptual understanding and influence of the French Drain on the upper HSU. The reasoning to eliminate groundwater modeling of the HSU due to the French Drain is acceptable if observations and subsequent loading analysis of the SID and Woman Creek, account for all loadings through the surface water pathways with the linkage to the USLE(s).*

Response: Groundwater modeling was eliminated because the French Drain is considered to 1) effectively collect contaminated groundwater from the 881 Hillside Area and (2) will significantly reduce potential releases to downgradient groundwater. Data collected prior to the Phase III Work Plan and during the Phase III RI support these conclusions.

2 *Surface water modeling of the SID and validation that no loading is occurring to Woman Creek is dependent, at a minimum, upon results of a loading analysis. The mass analysis is dependent on concurrent data sets containing, flow, chemistry, organics and radionuclides (water column and sediment) and toxicity data (water column and sediment) for an event. The selection of appropriate locations for data collection is dependent on surface features such as discharge points and tributaries. Analytical detection levels must reflect the benchmark values for comparison to the appropriate standards.*

Neither the field sampling plans nor historical data sets contain concurrent flow and chemistry, adequate selection of locations and the necessary detection levels for possible contaminants of concern to model the SID or Woman Creek at this time.

The use of the Universal Soil Loss Equation (USLE) coupled to a hydrologic event model is acceptable protocol. Quantification of the sediment and soil borne contaminants with the USLE is only part of the required effort. Surface water modeling of the SID requires evaluation of loading in the SID itself. Both evaluations (application of USLE and SID evaluation) are speculative until calibrated and verified. The application, calibration and verification of surface water modeling of the SID is questionable at this time. Calculation of the loads to the SID from past and recent data from field sampling plans is unusable for this purpose. Recent review of DOE's chemical, flow and toxicological data available from 1986 through 1991 and into 1992

for the SID and Woman Creek are the basis of these comments. (Stations GS05, GS06, GS01, GS02 and SW027 and 8/91 toxicity profile of Woman Creek).

The lack of concurrent; chemistry at benchmark levels for important COCs, flow, and toxicity at any location (let alone along either the SID or Woman Creek) do not allow the determination of loading and the transport mechanism. Calculate the loading in the SID with field observations to validate the estimates using the USLE(a). If transport mechanism is not quantified (flow) and loading determined, modeling is moot. The point of modeling and monitoring is to answer the question: What is the contaminant transport in a storm event? Determine the data quality objectives needed to validate the site-specific model. Calibrate and verify the model with separate sets of observations. Perform a simple mass analysis of events at multiple locations in the drainage, initially, to establish reliable loading factors, exposure levels, fate and transport.

4 The level(s) of resolution and complexity needed in the models for the adequate quantification of source and pathways is part of the modeling effort and not a subject of this document. But, the sampling plans for OU2 or OU5 are not mentioned. The effects of transport of americium, plutonium and uranium, and possibly organics, from OU2 cannot be distinguished from OU1 on the SID and possible pertinent segments of Woman Creek. Segregation through segmentation of the drainages and segregation of particulate sizing, etc. may be important considerations. The determination of loading and descretizing each source area with application of USLE(s) is dependent on representative monitoring.

Consider the incorporation of work under Surficial Soil Sampling Plan of the Final Phase II RCRA Facility Investigation Remedial Investigation, February 5, 1991 with Technical Memorandum 5 and site-wide baseline soil characterizations in the surface water modeling of the SID.

A model of surface water transport under the principal hydrologic condition of concern, storm and snow melt events, requires some coordination of the data collection efforts for OU1 and other portions of the applicable drainage. It is highly likely a simple mass analysis at a modest number of locations, for the correct table of analytes, could result in a very simple, but effective, understanding of the fate and transport of contaminants in surface runoff from OU1, and possibly OU2 and 5. The data must represent the conditions to be modeled and therefore requires acquisition of data concurrently at the appropriate locations.

Response (2-4): It is noted that neither field sampling plans nor historical data sets contain concurrent flow and chemistry information. For this reason, a detailed surface water model of the SID was not possible. Thus, the monitoring data were used for the exposure assessment as they provide the best estimate of current exposure concentrations. Estimates of SID concentrations resulting from overland flow were done, however, to provide a rough

approximation of contaminant loading from OU1. These estimates indicate that potential overland flow concentrations in the SID are less than measured values. This is expected since the SID can receive runoff from other areas in addition to OU1.